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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,211

03/26/2004

Udo Bickers

09879-00043-US

8656

23416

7590

09/15/2009

CONNOLLY BOVE LODGE & HUTZ, LLP

P O BOX 2207

WILMINGTON, DE 19899

EXAMINER

BROWN, COURTNEY A

ART UNIT

PAPER NUMBER

1616

MAIL DATE

DELIVERY MODE

09/15/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/810,211	Applicant(s) BICKERS ET AL.	
	Examiner COURTNEY BROWN	Art Unit 1616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4,5,7,10-12,21-37 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26 is/are allowed.
- 6) ☒ Claim(s) 3-5,7,10-12,21-25 and 27-37 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 16, 2009 has been entered.

Acknowledgement of Receipt/Status of Claims

This Office Action is in response to the amendment filed June 18, 2009. Claims **4,5,7,10-12 and 21-37** are pending in the application. Claims 1-3,6,8,9 and 13-20 have been cancelled. Claims 32-37 are newly added. Claims 4,5,7,10-12 and 21-37 are being examined for patentability.

Rejections not reiterated from the previous Office Action are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set of rejections and/or objections presently being applied to the instant application.

Withdrawn Rejections

The rejection of claims 4-12 and 21-25, and 27-31 under 35 U.S.C. 103(a) as being unpatentable over Senaratna et al. (WO 99/25191) in view of Bussler et al. (US Patent 5,710,100) has been **withdrawn**.

New Rejection(s) Necessitated by the Amendment filed on June 18, 2009

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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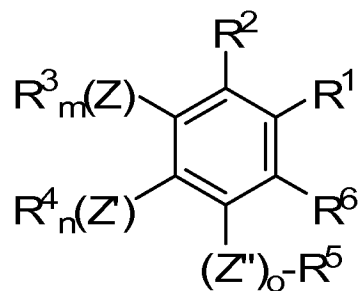
not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 5, 7, 10-12, 21-25 and 27-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Senaratna et al. (WO 99/25191, cited the Final Office Action mailed September 18, 2009) in view of Smutny et al. (USP 3,101,265) and D'Halluin (USP 6,140,553).

Applicant's Invention

Applicant claims a method for protecting useful plants or crop plants against phytotoxic side effects of agrochemicals, which comprises applying, as safeners, an effective mount of one or more compounds of the formula (I) or salts thereof, before, after or simultaneously with the agrochemicals to rice, cereal, corn, cotton and soybean crop plants, parts of said plants, said plant seeds or its propagation material,

Formula I

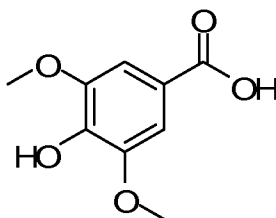


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wherein R is a radical of the formula $-\text{CN}$ $-\text{C}(=\text{X})-\text{Y}-\text{R}$ or $-\text{C}(=\text{X})-\text{Het}$, in which X is a divalent radical of the formula O, S or NR_a or $\text{N}-\text{NR}_a\text{R}_b$, where R_a and R_b are as defined in the instant specification and Y is a group of the formula O or S.

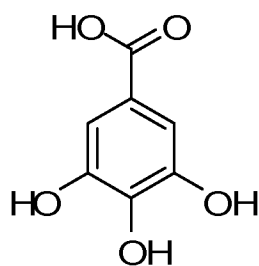
***Determination of the scope and the content of the prior art
(MPEP 2141.01)***

Senaratna et al. teach a method for inducing stress tolerance in plant material comprising applying to the plant material an effective stress-regulating amount of one or more active compounds of formula (I) of the instant application wherein of instant formula I wherein $\text{R1}=-\text{C}(=\text{X})-\text{Y}-\text{R}$ wherein X and Y=O, R=H; R2 and R6=H; Z,Z' and Z''=O; R3 and R5=methyl; R4=H m, n and o=1 (i.e., **syringic acid**) or wherein $\text{R1}=-\text{C}(=\text{X})-\text{Y}-\text{R}$ wherein X and Y=O, R=H; R2 and R6=H; Z,Z' and Z''=O; R3, R4 and R5=H; m=0 and n and o=1 (i.e., **gallic acid**). Senaranta et al. teach the use of active compound of formula (I) to induce tolerance to temperature, drought, freezing, heat (i.e. harmful environmental factors), and herbicide tolerance (page 6, lines 1-6).



4-hydroxy-3,5-dimethoxybenzoic acid

syringic acid



3,4,5-trihydroxybenzoic acid

gallic acid

Senaranta et al. teach (page 6, lines 12-18) that the induction of stress tolerance may be achieved by application of the active compound to plants in various stages of development such as applying to the soil habitat of the plant or directly to the plant in the seedling stage (i.e., post-emergence). Senaranta et al. teach that seed may be imbibed in one or more of the active compounds prior to planting (i.e., pre-emergence, page 6, lines 12-18). Senaratna et al. also teach that said active compound may be applied to the plant material in conjugation with compounds such as insecticides, acaricides, nematocides, fungicides, and herbicides (page 11, lines 16-20).

Additionally, Senaranta et al. teach that the plant material to which the said compound is applied to be various forms of plant material including whole plants such as seedlings and portions thereof such as cuttings, plant tissues, fruit, flowers and seeds (page 4. lines 25-29).

***Ascertainment of the difference between the prior art and the claims
(MPEP 2141.02)***

The difference between the invention of the instant application and that of Senaranta et al. is that Senaranta et al. do not expressly teach the use of the compound of instant formula I to corn, cereal, cotton or soybean crop plants. This deficiency in Senaranta et al. is cured by the teachings of Smutny et al. Smutny et al. teach plant growth compositions comprising an active -growth-modifying agent, comprising a sulfonium cation and an anion of an aromatic carboxylic acid such as synergic and gallic acid to form, a biologically active sulfonium salt compound (columns 1-3) that can be used as pre-emergence herbicides but are most effectively used in post-emergence applications to growing plants (column 5, lines 19-30 and column 9, lines 25-29). Smutny et al. teach that said sulfonium salts can be used as effective herbicides to destroy unwanted plant growth and are more toxic toward grasses and other narrow-leaved plants than toward broad-leaved plants. In particular, Smutny et al. teach that said salts are highly active with respect to perennial grasses, but have been found to be nearly inert and nontoxic toward broad-leaved plants such as cotton, peas, clover, soybeans, radish, cabbage, cauliflower and brussel sprouts wherein the plant growth-modifying properties of individual species vary (column 5, lines 46-64). Smutny et al. teach growth-regulating compositions comprising one or more of said herbicidal sulfonium salts may comprise other biologically active substances such as naphthaleneacetic acid, 2,4-dichlorophenoxyacetic acid as well as insecticides such as DDT and methoxchlor, rotaenone and pyrethrum, and fungicides, such as copper-compounds, ferbam and captan.

The difference between the invention of the instant application and that of Senaranta et al. is that Senaranta et al. do not expressly teach the use of the compound of instant formula I to rice crop. This deficiency in Senaranta et al. is cured by the teaching of D'Halluin. D'Halluin teaches a process for integrating a DNA fragment into the genome of a cell of a monocotyledonous plant, particularly corn, rice, wheat or barley, comprising a step of incubating, prior to the contacting with the DNA fragment, a culture of untransformed monocotyledonous plant cells on a medium comprising a plant phenolic compound, particularly a plant phenolic compound selected from the group of acetosyringone, alpha -hydroxy-acetosyringone, sinapinic acid, and **syringic acid** (column 2, line 65 bridging to column 3, lines 1-12). The foreign DNA that is produced is used in a method which encodes a protein that confers to the cell resistance to an antibiotic or other chemical compound that is normally toxic for the cell. In plants, this confers resistance to herbicides, such as an herbicide comprising a glutamine synthetase inhibitor (such as 2, 3, 5-triodobenzoic acid, glyphosine and bistrifluron) as an active ingredient (column 8, line 61 bridging to column 9, lines 1-7). D'Halluin additionally teaches plant transformation procedures generally include the culturing of cells, cell cultures, tissue or explants prior to contacting the cultured tissue with the foreign DNA. Several tissues have been described as starting material for the transformation procedures, including but not limited to dry seeds (column 6, lines 56-61).

Finding of prima facie obviousness

Rationale and Motivation (MPEP 2142-2143)

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Senaranta et al. and Smutny et al. in a method for protecting cereal, corn, cotton or soybean crop plants against the phototoxic effects of agrochemicals using the compound of instant formula I. Senaranta et al. teach the use of active compound of formula (I) to induce tolerance to herbicide (page 6, lines 1-6). Smutny et al. teach that sulfonium salts of the compound of the instant invention can be used as effective herbicides to destroy unwanted plant growth with respect to perennial grasses, but have been found to be nearly inert and nontoxic toward broad-leaved plants such as cotton, peas, clover, soybeans, radish, cabbage, cauliflower and brussel sprouts. One skilled in the art at the time the invention was made would have been motivated to use the compound of instant formula I because it has been shown that the instant compounds, while toxic to weeds, are not toxic to crop plants. Most importantly, one skilled in the art at the time the invention was made would have been motivated to use the compound of instant formula I because it induces herbicide tolerance. It is noted that the compounds and compositions of the prior art are the same as Applicant's compound and compositions. Thus, the skilled artisan would recognize that a instant compound of formula I and compositions comprising said compounds are inseparable from its properties. Thus, it is the Examiner's position that the prior art structure is capable of performing the intended use and meets the claimed invention.

It would have been obvious to one of ordinary skill in the art at the time of invention to combine the teachings of Senaranta et al and D'Halluin in a method for protecting rice against the phototoxic effects of agrochemicals using the compound of instant formula I. Senaranta et al. teach the use of active compound of formula (I) to induce tolerance to herbicide (page 6, lines 1-6). D'Halluin teaches that an exogenous supply of plant phenolic compounds may trigger a wound-like response when applied to monocotyledonous plants and that the use of said phenolic compounds encodes a protein that confers herbicide resistance to rice plant cells. One skilled in the art at the time the invention was made would have been motivated to use the compound of instant formula I in a method of protecting rice from the phototoxic side effects of rice because both references teach that the compound of instant formula I induces herbicide tolerance in crop plants. Thus, in view of *In re Kerkhoven*, 205 USPQ 1069 (C.C.P.A. 1980), it is *prima facie* obvious to combine two or more compositions each of which is taught by prior art to be useful for the same purpose in order to form a third composition that is to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in prior art, thus claims that requires no more than using phenolic compounds such as gallic and syringic acid to protect rice crop from the phototoxic affects of herbicides set forth *prima facie* obvious subject matter.

Accordingly, in view of the cited references and that knowledge generally available to the ordinarily skilled artisan, it is apparent that such individual would have been motivated to combine the teachings of the respective references in the manner of Applicant to arrive at the claimed invention.

Therefore, the claimed invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made because every element of the invention has been fairly suggested by the cited reference.

Allowable Subject Matter

Claim 26 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. The prior art does not teach a method for protecting useful plants or crop plants against phototoxic side effects of agrochemicals, which comprises applying, as safeners, an effective amount of one or more compounds of the formula (I) or salts thereof, before, after or simultaneously with the agrochemicals to the plants, parts of plants, plant seeds or propagation material, wherein R1 is a radical of the formula $-\text{C}(=\text{NR}^a)-\text{OR}$.

Examiner's Response to the Declaration 1.132 Affidavit

of Dr. Udo Bickers

The Examiner has thoroughly reviewed and considered the test data on June 16, 2009 and agrees with Applicant's position that the compounds of formula I, as defined in claim 21 do not reduce the effect of agrochemicals on undesired organisms (such as weed plants), but are preferred safener compounds for crop plants as well.

Applicant argues that Senaratna et al. shows examples of compounds not within the scope of the present claims, which have the effect of reducing phytotoxicity of paraquat and other compounds on certain crop plants (tomato and beans) and that Senaratna et al. fail to teach whether the safener effect is substantially selective to the crop; i.e., whether or not weeds are also safened by the test compound because there is no disclosure or suggestion of the effect of the test compound on weeds. The Examiner disagrees with Applicant's arguments because they are not commensurate in scope with the instant claim 21. Instant claim 21 is drawn to a method of protecting useful plant or crops. Thus, the Applicants argument of whether or not weeds are also safened by the test compound is moot.

Response to Arguments

Applicant's arguments, filed June 18,2009, with respect to the 103 rejection of claims 4-12 and 21-25, and 27-31 under 35 U.S.C. 103(a) as being unpatentable over Senaratna et al. (WO 99/25191) in view of Bussler et al. (US Patent 5,710,100) have been considered but are moot in view of the new ground(s) of rejection.

However, because the teaching of Senaratna et al. has been in this rejection, the arguments relating to Senaratna et al. will be addressed.

Applicant argues that the claimed methods differ from the teachings of Senaratna et al. in the specific structure of the compounds of formula I of the instant application because Senaratna et al. discloses the use of benzoic acid and functional derivatives thereof for inducing stress tolerance in plant material. Applicant argues that the

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compounds of Formula I in Seneratna et al., representing the benzoic acid derivatives, may generally be substituted at the phenyl ring by one or more substituents and that any of the values given for R1-R5 can be present at any of the five positions around the phenyl ring. Applicant agrees that some of the compounds of Formula I according to the present invention fall within the general formula of Senaratna et al. but argues that the substitution pattern of the phenyl ring is not found in the specific examples of Senaratna et al., which disclose only benzoic acid, salicylic acid, 5-sulfosalicylic acid, and acetylsalicylic acid, which compounds themselves do not fall within the scope of the compounds of Formula I as recited in claim 21.

However, the Examiner disagrees with Applicant's arguments because although there are no specific examples of the compounds as defined in instant claim 21, Senaratna et al. teaches a generic group of aromatic acid derivatives, which embraces Applicants' claimed compounds. The claims differ from the reference by reciting specific species and a more limited genus than the reference. However, it would have been obvious to one having ordinary skill in the art at the time of the invention to select any of the species of the genus taught by the reference, including those instantly claimed, because the skilled chemist would have the reasonable expectation that any of the species of the genus would have similar properties, and thus, the same use as taught for the genus as a whole. One of ordinary skill in the art would have been motivated to select the claimed compounds from the genus in the reference since such compounds would have been suggested by the reference as a whole. A prior art disclosed genus of useful compounds is sufficient to render prima facie obvious a

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species falling within a genus. Thus, Applicant's claims are obvious, and therefore remain rejected under 35 U.S.C. 103.

Conclusion

The claims remain rejected.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR Only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Courtney Brown, whose telephone number is 571-270-3284. The examiner can normally be reached on Monday-Friday from 8 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Courtney A. Brown
Patent Examiner
Technology Center 1600
Group Art Unit 1616

/Ernst V Arnold/
Primary Examiner, Art Unit 1616